

TECHNICAL SECTION

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Designs in Cotton Shirting Fabrics

A GOOD shirting fabric must have a ground that will stand up well under frequent laundering. The colors must be well harmonized and fast to bleaching. If silk yarn is introduced it must be in sufficient quantity to make a solid stripe, or it must be backed up with cotton to prevent slipping during the finishing process and subsequent laundering. A good shirting fabric should really look better every time it comes from the laundry, and continue to look well until worn out. Such a fabric can be made on what is termed a madras ground or on a pongee ground.

Fully eighty per cent of the cotton shirtings made today are of madras ground construction. The simpler patterns are made with a plain weave ground and color stripes woven in plain order. The more elaborate patterns are made on dobby or jacquard looms by combining fancy weaves on a color ground, or by introducing the color in the order of one end of color and one end of white, or two or three ends of color and two or three ends of white.

The most popular fancy weaves used on colored grounds are the momie or crepe filling flush. When using a filling flush momie weave on a solid color ground the filling floats show as small white pin spots scattered over the color. This effect is very novel and pleasing. The momie weave does not show any regular pattern or order of weaving.

When a subdued effect is desired, the color is introduced in the order of one end color, one end white; or two ends color, two ends white. If the ground work has to be all white and in a broken order, the momie weave should be woven warp face, or the character of the weave should be such that the warp floats equal the filling floats, and be so broken up that the stripe will have a crepe-like appearance.

When making pongee ground shirting fabrics, fancy filling float figures can be introduced because the construction of the ground is such that the warp is almost buried in the filling, throwing up the fancy filling pattern in bold relief. Pongee ground shirting fabrics are fairly popular, but do not make such a dressy shirt as the madras shirting fabric. They are commonly piece mercerized and have a soft feel when finished.

Some Popular Constructions—Points on Laying Out to Facilitate Weaving

By Lanethora

Some beautiful effects are produced during the finishing process, particularly if natural silk is used for stripes.

MADRAS AND PONGEE CONSTRUCTIONS
The following construction is consid-

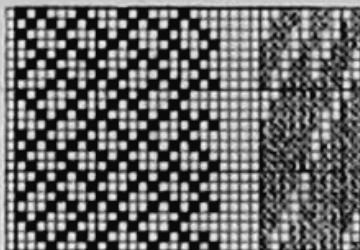


FIG. 2

ered among the best used for madras shirtings:

96x92
50s warp
30s filling

The construction that is most largely used for madras shirtings is as follows:

84x84
40s warp
40s filling

Another popular construction, and one that is coming into larger use, is as follows:

84x72
40s warp
30s filling

The fewer picks per inch in this last construction insures a better production than on the first two. The heavier filling balances the fabric, and the lower pick means better weaving.

The cheapest grade of madras shirting made is around 72x68 with 40s warp and 35s filling. The size of the colored yarn used is 40s single.

The construction of pongee shirtings does not vary so much as in madras shirtings; most all pongee grounds count as follows:

72x100
72x96
68x96

In all these constructions 60s warp and

40s to 45s soft twist filling are used. A popular cheap pongee fabric is made as follows:

64x72
50s warp
30s soft twist filling

Fig. 1 shows a fancy artificial silk and colored stripe madras fabric. The silk in the stripe is 150 denier. The black edging for the silk stripe is a 4-end sateen weave. The fancy part of ground is the weave shown at the left of Fig. 2. The colored yarn in the ground is laid in as below:

2 pink
2 white
2 slate
2 white
2 black

The fancy ground weave repeats on 10 ends and 12 picks, but can be woven on 7 harnesses. The weave of the silk

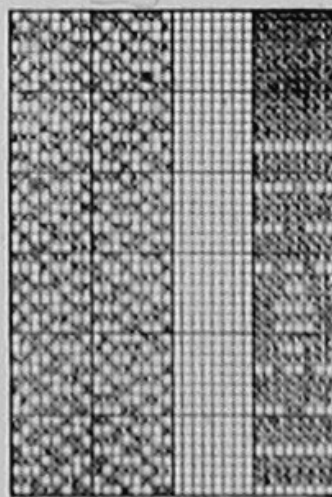


FIG. 4

stripe is shown at the right of Fig. 2. It repeats on 10 ends and 24 picks, but can be woven on 7 harnesses. The entire pattern requires 20 harnesses as

follows: 2 for fancy ground; 2 for plain ground and selvage; 7 for silk stripe; 4 for color stripe.

SPREAD ARTIFICIAL SILK

Fig. 3 shows an artificial silk and col-

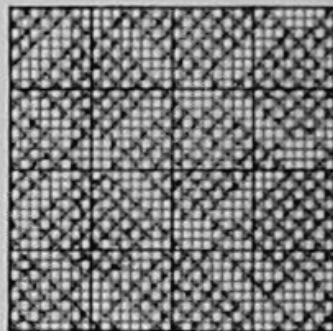


FIG. 6

ored stripe madras shirting fabric. The ground weave is shown at the left of Fig. 4 and the weave of the artificial silk stripe at the right of Fig. 4. The ground weave repeats on 16 ends and 48 picks, but can be woven on 8 harnesses. The artificial silk stripe weave repeats on 8 ends and 48 picks, but can be drawn on 3 harnesses. It is, however, advisable to draw the artificial silk on 5 harnesses in order to spread the silk so there will be less friction in weaving. The colored stripe edging the silk stripe is a 4-end sateen weave. This pattern will require 19 harnesses distributed as follows: 8 for ground weave; 5 for artificial silk stripe; 4 for colored stripe; 2 for plain and selvage.

Fig. 5 shows a fancy silk and colored striped pongee shirting. The silk is natural 23/25 Italian, and is drawn as doubles, that is, 2 ends of silk together in one heddle, and 4 doubles in one dent, equaling 8 ends of silk per dent of reed. It is good practice to draw this kind of silk as doubles, as it is a help toward good weaving. The ground of this fabric is 68 warp ends of 60s, and 96 picks of 45s soft twist filling per inch. The center of the ground work is drawn 3 ends colored and 4 ends white, the color combination being orange and blue. The ground weave is shown at Fig. 6 and is a point draw. The weave repeats on 32 ends, but is drawn on 11 harnesses. The

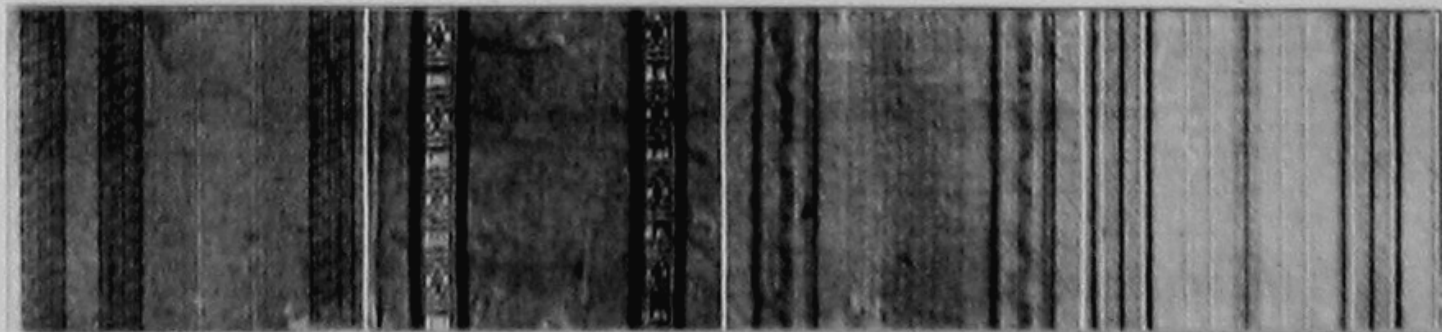


FIG. 1

FIG. 3

FIG. 5

FIG. 7

and color stripe setting is a 4-end sateen. This fabric requires 20 harnesses to weave as follows: 11 for ground; 3 for sateen stripes; 4 for plain and selvages.

Fig. 7 shows a Bedford cord and colored stripe madras shirting fabric made with a construction of 84x72, 40s warp and 30s filling. Fig. 8 shows the momic weave, repeating on 8 ends and picks, which is a feature of the fabric. This is a very popular weave when introduced on a colored ground. The narrow cross-stripe is solid colored Bedford cord, placed on each side with narrow solid color stripes made with the momic weave. The rest of the white stripes are Bedford cord, with 2 ends of 2/30s wadding. The wider momic stripes are bordered with colored sateen and white Bedford cord. This momic stripe is laid in one end of color and one end of white. In the center are 4 ends of black woven in 4-end sateen order.

When enough harnesses are available it is well to draw the momic weave on 8 harnesses, but it can be drawn on 4 harnesses. The 4 harness draw is objectionable because of the danger of

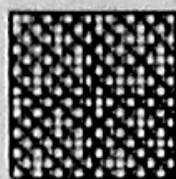


FIG. 8

wrong draws, and wrong draws make the work kind of second quality cloth. Fig. 7 will require 19 harnesses as follows: 4 for plain ground; 8 for momic stripe; 4 for 4-end sateen; 2 for Bedford cord; 1 wadding for Bedford cord.

The Setting of Drawing Rolls

Close Attention Required to Prevent Excessive Wear and Irregular Draft

IT would seem that details of the proper setting of drawing rolls on roving and spinning frames in cotton mills is a subject with which every mill operative is so familiar that comment would be uninteresting. Yet it is a fact that improper setting, or neglect of any kind of setting, is responsible for a considerable amount of bad work and waste which results from such practice. It makes a great difference whether draft rolls are set too far apart, too close, or just right.

There are various ways of setting rolls incorrectly, and particularly irregularly, which may be listed as follows: Some rolls are set too close; others too far apart. Some are out of line with the bottom roll; others are not on centers vertically. Most manufacturing is done under conditions fairly correct, but much of it is done under irregularities such as those specified above. Yet this is a very important manufacturing detail.

ROLLS SHOULD LINE UP

If rolls are set too close, many fibers are broken, and the yarn is weakened considerably by this loss of strength. If rolls are spaced too far apart, there will result thick and thin places in the yarn. And rolls that are not in line with the bottom roll, or not on centers, will cause uneven yarns by their imperfect draft action. Fig. 1 shows an incorrect method of setting which lacks the grip of the rolls on the sliver passing through. Fig. 2 shows the correct setting of rolls on centers. Obviously, if the bottom rolls are set at

the proper distance from each other, the top rolls should be set in a manner to make this result the same on the contact points as such spacing of the bottom rolls was intended to make it. Both sets of rolls should line up.

A COMMON HAPHAZARD

Reference to Fig. 1 illustrates a very common fault in setting the top roll. It will be noticed that the front top roll is set directly over the bottom roll. But the other two sets of rolls are placed off centers with the bottom rolls. It will be noted that the difference between the centers at which contact is made with the bottom roll show an extreme variation of half an inch from the correct position of each roll. This, while somewhat of an exaggeration of typical cases, is nevertheless a good illustration of improper settings often found.

Another evil which this improper setting of the top rolls involves is the deflection of the travel of the roving, giving it a different bite at the back and middle rolls from that obtained by the front rolls. This results in a deflection of 3/16 of an inch in the passage of the roving, out of a straight line traverse which should always be the rule.

WITH CORRECT SETTINGS

Reference to Fig. 2 shows the correct relation between top and bottom rolls in all cases, and illustrates how they should be kept at all times. This gives the passage of roving sliver a straight line traverse, and results in much better work.

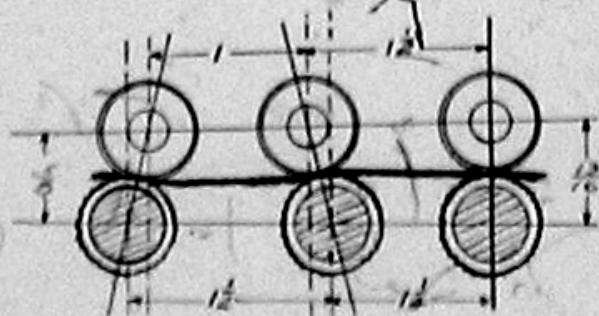


FIG. 1. INCORRECT SETTINGS THAT WEAKENS GRIP ON FIBERS; NOTE DEFLECTION IN PASSAGE OF ROVING

When rolls are set out of line, as shown in Fig. 3, contacts between the rolls is very imperfect, and very damaging to roll coverings, as well as productive of faulty yarn. The cut gives

these points have their bearing on the action of rolls when set to a society. It is generally recognized that there is a reasonable latitude in this setting of rolls, but that it should be within a dif-

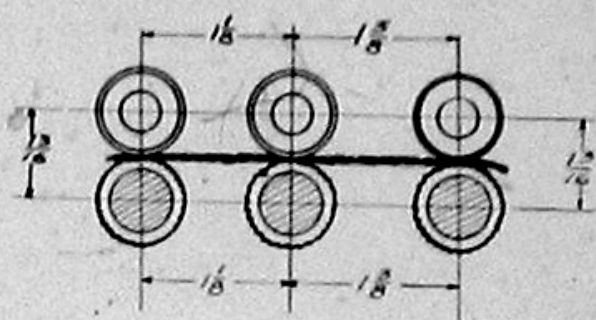


FIG. 2. CORRECT SETTING OF ROLLS ON CENTERS; NOTE STRAIGHT LINE TRAVERSE OF ROVING

an exaggerated illustration of this haphazard setting, which is, however, frequently to be found, and one which cannot be too strongly condemned. Proper settings must first embody alignment of rolls longitudinally. Then top rolls must be set over bottom rolls on centers vertically, if irregular draft action is to be avoided, even when bottom rolls are properly spaced.

PROPER SPACING OF ROLLS

There are many considerations which

reference of not over a sixteenth of an inch from the best possible position.

In this matter of roll adjustment, the best practice, where there is doubt about the proper spacing between the rolls, is to begin by spacing the rolls at what would be considered too close together. Then they should be moved back only enough to make the yarn what it is desired to have it by their perfect operation. If it is found, however, that rolls work well at 1 5/32 inches apart, the

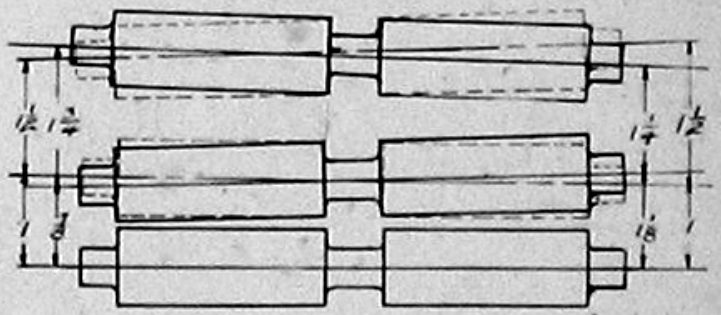


FIG. 3. ROLLS OUT OF LINE; DAMAGING TO COVERING AND PRODUCTIVE OF FAULTY YARN

govern the proper spacing of rolls which are properly on centers vertically, as to distance apart horizontally. These may be listed as follows:

- Light or heavy weight on top rolls.
- High or low speed of rolls.
- Rolls of weighted or self-weighted type.
- Short or long draft of cotton in passing through.
- New or old rolls, that are either sharp or dull.
- Coarse or fine work.
- Hard or soft twist.
- Single or double roving.
- High or low grade cotton.
- Large or small rings.
- Light or heavy travellers.
- Short or long cotton.
- Large or small rolls.
- Leather or composition covered rolls.
- Metallic top and bottom rolls.
- Long or short traverses.

SETTINGS VARY

Many of the above considerations affect the proper setting of rolls when they exist in combinations which require it. Conditions vary and so does the procedure for setting rolls, but all of

best practice would be to set them 1 1/4 inches apart, as it will be found that this is the safest practice in the long run. This is true because of the far-reaching effect of saving as many as possible of the shorter fibers, which are held in the sliver if not allowed to be dropped more or less by a space between rolls which exceeds the length of the staple. This is particularly true in the case of carded work, but combed work is also affected to a certain extent, because of the presence of a certain percentage of short fiber which persists.

RESULTS OF SETTING TOO FAR APART

The results then of spacing the rolls too far apart is that much more waste is made at the draft rolls of all machines than would be the case were rolls set as close together as good running would permit. But it is not always desirable to prevent short fibers from falling through between draft rolls. In the case of finely combed stock, for finest yarns, it is desirable to let short fibers drop out if they will, and avoid injury to the longest fibers by setting the rolls a greater distance apart than the longest length expected to occur among the cotton. Otherwise, in the general run of work, where a certain amount of short fibers does not injure the fabrics made, the rolls should be given the best possible setting for best running, even to